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W19b

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COASTAL DEVELOPMENT PERMIT APPLICATION

Application number.....**3-02-096, 26th Avenue Stairway Replacement**

Applicant.....Santa Cruz County Parks Department

Project location.....The seaward end of 26th Avenue where it meets 26th Avenue Beach in the unincorporated Live Oak area of Santa Cruz County.

Project description.....Reconstruct public beach access stairway (extending from the end of 26th Avenue to the beach below) and existing revetment (protecting stairway, blufftop public park, and other public improvements).

File documents.....Santa Cruz County Certified Local Coastal Program (LCP); California Coastal Commission Coastal Development Permit (CDP) file XS-82-36 (26th Avenue Stairs); Santa Cruz County CDP file 01-0056 (26th Avenue Overlook); California Coastal Commission Monterey Bay ReCAP.

Staff recommendation ....**Approval with Conditions**

Summary of staff recommendation: The County proposes to replace the 26th Avenue beach access stairway and to augment the revetment protecting both the stairs and the blufftop improvements at the street end overlook. The County recently approved a CDP to enhance the overlook area with new benches, landscaping, parking spaces, and advanced water quality filtration; this proposed project is functionally connected to that project and would be constructed simultaneously. Beach access stairs and armoring at this location pre-date the Coastal Act. The bluffs fronting the beach up and downcoast are continuously armored with rip-rap. The stairs have been washed away in winter storms multiple times over the years. Most recently, the stairs were destroyed during the 1997-98 winter storms, and have been missing ever since. The 26th Avenue stairway provides for an important vertical access link in this stretch of Live Oak beach area since it provides the only vertical access between Corcoran Lagoon and Moran Lake to the very popular beach and offshore surfing area here. Staff has worked closely with the Applicant on the parameters of a stairway project designed to ensure long-term stability, including incorporating a concrete stairway base, and designed to protect, preserve, and enhance this critical access point for current and future generations to enjoy. Staff and the Applicant are in agreement with the project conditions. **Staff is recommending approval with conditions.**

Staff Report Contents

1. Staff Recommendation on Coastal Development Permit

Staff recommends that the Commission, after public hearing, **approve** a coastal development permit for the proposed development subject to the standard and special conditions below.

Motion. I move that the Commission approve Coastal Development Permit Number 3-02-096 pursuant to the staff recommendation.

Staff Recommendation of Approval. Staff recommends a **YES** vote. Passage of this motion will result in approval of the coastal development permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Resolution to Approve a Coastal Development Permit. The Commission hereby approves the coastal development permit on the ground that the development as conditioned, will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the coastal development permit complies with the California Environmental Quality Act because either: (1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the amended development on the environment; or (2) there are no feasible mitigation measures or alternatives that would substantially lessen any significant adverse effects of the amended development on the environment.

2. Conditions of Approval

A. Standard Conditions

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the Permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the Permittee to bind all future owners and possessors of the subject property to the terms and conditions.

B. Special Conditions

1. **Approved Project.** This approval allows for the construction of a replacement public access stairway and the repair of the revetment present on the bluff located at the end of 26th Avenue pursuant to the project plans titled "26th Avenue Beach Access Stairway" by Ifland Engineers dated May 13, 2003 and dated received in the Coastal Commission's Central Coast District Office May 28, 2003 ("Approved Plans") and as subsequently revised to lower the height of the concrete portion of the banisters on the lower one third flight of the stairway to a maximum of 18". All privately owned and/or maintained structures located on County property seaward of the edge of the blufftop shall be removed in their entirety.

   The Permittee shall undertake development in accordance with the Approved Plans. Any proposed changes to the Approved Plans shall be reported to the Executive Director. No changes to the Approved Plans shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is necessary.

2. **Construction Plan.** PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit a Construction Plan to the Executive Director for review and approval. The Construction Plan shall identify the specific location of all construction areas, all staging areas, all construction access corridors (to the construction sites and staging areas), and all public pedestrian access corridors in site plan view. All such areas within which construction activities and/or staging are to take place

shall be minimized to the maximum extent feasible in order to minimize construction encroachment on the beach and to have the least impact on public access. The Plan shall specify all construction methods to be used, including all methods to be used to keep the construction areas separated from beach recreational use areas (including using the blufftop and 26th Avenue street space available inland of the revetment and stairway for staging, storage, and construction activities to the maximum extent feasible) and shall include a final construction schedule. All erosion control/water quality best management practices to be implemented during construction and their location shall be noted. Silt fences, or equivalent apparatus, shall be installed at the perimeter of the construction site to prevent construction-related runoff and/or sediment from entering into the Monterey Bay. The Construction Plan shall, at a minimum, include the follow required criteria specified via written notes on the Plan:

(a) All construction materials and equipment shall be removed in their entirety from the beach area by sunset each day that work occurs. The only exception shall be for erosion and sediment controls (e.g., a silt fence at the base of the revetment) as necessary to contain rock and/or sediments at the revetment site; such controls to be placed as close to the toe of the revetment as possible, and to be minimized in their extent.

(b) All work shall take place during daylight hours. Lighting of the beach area is prohibited.

(c) Construction work or equipment operations shall not be conducted below the mean high water line unless tidal waters have receded from the authorized work areas.

(d) Grading of intertidal areas is prohibited with one exception as follows: existing rock that has migrated seaward of the revetment, that is naturally exposed, and that can be retrieved without substantial excavation of the surrounding sediments, shall be retrieved and reused or removed to an appropriate disposal site offsite. Any existing rock retrieved in this manner shall be recovered by excavation equipment positioned landward of the waterline (i.e., excavator equipment with mechanical extension arms).

(e) Any construction materials and equipment that cannot be delivered to the site from the blufftop above, shall be delivered to the beach area by rubber-tired construction vehicles. When transiting on the beach, all such vehicles shall remain as high on the upper beach as possible and avoid contact with ocean waters and intertidal areas.

(f) All construction materials placed on the beach during construction shall be stored beyond the reach of tidal waters. Use of sandy beach outside of the defined construction and staging areas is prohibited.

(g) No work shall occur on the beach during the summer peak months (start of Memorial Day weekend to Labor day) unless, due to extenuating circumstances, the Executive Director authorizes such work.

(h) Equipment washing, refueling, and/or servicing shall not take place on the beach.

(i) The construction site shall maintain good construction site housekeeping controls and procedures

(e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain (including covering exposed piles of soil and wastes); dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; remove all construction debris from the beach).

(j) All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each work day.

A copy of the approved Construction Plan shall be kept at the construction job site at all times and all persons involved with the construction shall be briefed on its content and meaning prior to the commencement of construction.

The Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office at least 3 working days in advance of commencement of construction, and immediately upon completion of construction.

The Permittee shall undertake construction in accordance with the approved Construction Plan. Any proposed changes to the approved Construction Plan shall be reported to the Executive Director. No changes to the approved Construction Plan shall occur without the Executive Director's authorization.

3. **Beach Restoration.** WITHIN THREE (3) DAYS OF COMPLETION OF REVETMENT AND STAIRWAY CONSTRUCTION, the Permittee shall restore all beach areas and all beach access points impacted by construction activities to their pre-construction condition. Any beach sand impacted shall be filtered as necessary to remove all construction debris from the beach. The Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office upon completion of beach restoration activities to arrange for a site visit to verify that all beach restoration activities are complete. If planning staff should identify additional reasonable measures necessary to restore the beach and any beach access points impacted, such measures shall be implemented immediately. The beach and any beach access points impacted shall be considered restored, and this condition satisfied, upon written indication of same from planning staff of the Coastal Commission's Central Coast District Office.

4. **Upper Bluff Plan.** WITHIN ONE (1) MONTH OF COMPLETION OF REVETMENT AND STAIRWAY CONSTRUCTION, the Permittee shall submit an Upper Bluff Plan to the Executive Director for review and approval. The Upper Bluff Plan shall have three related and overlapping elements: a revegetation plan, an irrigation plan, and a drainage plan. These are more specifically described as follows:

   (a) Revegetation Plan. The revegetation plan shall provide for the removal of all non-native and/or invasive plant species (e.g., iceplant) currently present on the upper bluff area above the revetment, and the planting of native species along the full linear extent of the bluff area above the revetment in a manner designed to provide for a dense cascading screen of vegetation to completely cover the bluff area seaward of the blufftop edge and the upper one-third (roughly 10 vertical feet) of the revetment. Soils, soil composites (e.g., a mixture of sandy loam soil and

cement), and support for same (such as filter fabric or equivalent), may be placed in and/or on top of the upper portion of the revetment to provide adequate planting pockets as necessary to ensure effective and successful screening. The revegetation plan shall clearly identify in site plan view the type, size, extent and location of all native plant materials to be used as chosen from the following native planting palette (substitutions of appropriate native bluff edge plants to complement this planting palette may be allowed upon written consent from the Executive Director):

- Achillea millefolium – yarrow
- Artemisia californica – California sagebrush
- Bromus carinatus var. maritimus – seaside brome
- Ceanothus griseus var. horizontalis – "Carmel creeper"
- Ceanothus griseus var. horizontalis – "Yankee Point"
- Dudleya caespitosa – live forever
- Dudleya farinosa – live forever
- Elymus glaucus – blue wild rye
- Erigeron glaucus – seaside daisy
- Eriogonum latifolium – buckwheat
- Eriogonum parvifolium – dune buckwheat
- Eriophyllum staechadifolium – lizard tail
- Fragaria chiloensis – beach strawberry
- Grindelia stricta – gumweed
- Leymus pacificus – beach wild rye
- Mimulus aurantiacus – sticky monkey flower
- Myrica californica – wax myrtie
- Poa douglasii – maritime bluegrass
- Rhamnus californica – coffeeberry

The revegetation plan shall include maintenance and monitoring parameters, and shall require that all plants are replaced as necessary to maintain the dense cascading screen of vegetation to completely cover the bluff area seaward of the blufftop edge and the upper one-third (roughly 10 vertical feet) of the revetment over the life of the revetment.

(b) Irrigation Plan. The irrigation plan shall provide for irrigation (e.g., drip emitters) as necessary to

ensure that the revegetation plan is successful. All irrigation elements necessary for planting success shall be clearly identified in site plan view. All other irrigation elements present in the blufftop area shall be identified.

(c) Drainage Plan. The drainage plan shall clearly identify all permanent measures to be taken to collect and direct blufftop area drainage. Such drainage may be used for landscape irrigation, including for the native planting revegetation, provided such irrigation use does not contribute to bluff instability in any way. Any drainage not used for landscape irrigation purposes shall be collected and directed to the County's 26th Avenue storm drain system. The discharge pipe for the County's 26th Avenue storm drain system is allowed to discharge filtered and treated storm water to the revetment provided that the pipe is screened from view and its discharge does not contribute to bluff and/or revetment instability in any way. Drainage shall not be allowed to pond at the blufftop edge or sheet flow over the bluff seaward.

The Upper Bluff Plan shall be developed with input from a landscape professional experienced in iceplant eradication and native bluff planting efforts, and shall be submitted with evidence of the review and approval of an licensed engineering geologist or licensed geotechnical engineer to ensure that the Plan is consistent with promoting bluff and revetment stability. The Upper Bluff Plan shall include maintenance and monitoring parameters designed to ensure revegetation, irrigation, and drainage success. The Upper Bluff Plan shall include site plans and cross-sections that clearly identify all above-described elements in relation to the approved project and all property lines.

The Upper Bluff Plan shall be implemented immediately upon its approval by the Executive Director. All non-native and/or invasive plant species (e.g., iceplant) on the upper bluff area above the revetment shall be removed, and replaced with any combination of native species as identified on the Upper Bluff Plan, and all drainage and irrigation facilities shall be installed and shall be placed in working order.

The Permittee shall undertake development in accordance with the approved Upper Bluff Plan. Any proposed changes to the approved Upper Bluff Plan shall be reported to the Executive Director. No changes to the approved Upper Bluff Plan shall occur without the Executive Director's authorization.

The Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office when all native species identified in the Upper Bluff Plan have been planted and all drainage and irrigation facilities have been installed and are in working order consistent with the approved Upper Bluff Plan. Initial implementation of the Upper Bluff Plan shall be considered complete, and this condition satisfied, upon written indication of same from planning staff of the Coastal Commission's Central Coast District Office.

5. As-Built Revetment and Stairway Plans. WITHIN TWO (2) MONTHS OF COMPLETION OF REVETMENT CONSTRUCTION, the Permittee shall submit to the Executive Director for review and approval As-Built Plans of the revetment and stairway structures that include one or more permanent surveyed benchmarks inland of the revetment for use in future monitoring efforts. The As-Built Plans shall identify the extent of the revetment and stairway structures in site plan and cross-section views.

All property lines shall be identified. The benchmark elevation(s) shall be described in relation to National Geodetic Vertical Datum (NGVD). The As-Built Plans shall indicate vertical and horizontal reference distances from the surveyed benchmark(s) to survey points along the inland-most top and seaward-most toe of the revetment (located at those points in site plan view where the delineation of the revetment's edge changes direction) for use in future monitoring efforts; there shall be at least 3 such survey points along the inland top edge of the revetment (one at each property line and one in between), and at least 3 such survey points along the seaward toe of the revetment (one at each property line and one in between). The As-Built Plans shall also indicate vertical and horizontal reference distances from the surveyed benchmark(s) to survey points at the base of the stairway. The survey points shall be identified through permanent markers, benchmarks, survey position, written description, et cetera to allow measurements to be taken at the same location in order to compare information between years.

The As-Built Plans shall be submitted with certification by a licensed geotechnical engineer, acceptable to the Executive Director, verifying that the shoreline structures has been constructed in conformance with the Approved Plans (special condition 1) and the other requirements of these conditions.

6. **Monitoring.** The Permittee shall be responsible for regularly monitoring the as-built revetment and stairway by qualified personnel. Evaluation shall at a minimum address whether any significant weathering or damage has occurred that would adversely impact future performance, and identify any structural damage requiring repair to maintain the as-built revetment profile and stairway configuration. At a minimum, the Permittee shall consult with planning staff of the Coastal Commission's Central Coast District Office at five year intervals by May 1st of each fifth year (with the first consultation by May 1, 2008) for as long as the revetment exists at this site. Consultations shall address the monitoring evaluation described in this condition above, and shall include recommendations, if any, for necessary maintenance, repair, changes or modifications to the as-built revetment and stairway. Consultations shall also address the status of the upper bluff elements (i.e., revegetation, irrigation, and drainage) consistent with the parameters for monitoring, maintenance, and success established in the approved Upper Bluff Plan described in special condition 4 above.

7. **Shoreline Development Limitations.** By acceptance of this permit, the Permittee acknowledges and agrees, on behalf of itself and all successors and assigns that:

   (a) No Further Seaward Encroachment for Revetment. Any future response to shoreline erosion requiring the placement of any type of protective structure, including, but not limited to, modifications to the as-built revetment, shall be constructed inland of, and shall be prohibited seaward of, the seaward plane of the as-built revetment located at the seaward edge of the 26th Avenue street right-of-way. The seaward plane of the as-built revetment is defined by the as-built revetment footprint and profile.

   (b) Revetment Screening. The bluff area seaward of the blufftop edge and the upper one-third (roughly 10 vertical feet) of the revetment located at the seaward edge of 26th Avenue street right-of-way shall be completely screened from view (as seen from the beach) by a dense cascading

screen of native vegetation. To allow for initial growth, the required screening shall be initially achieved by at least May 1, 2005, with an interim standard that at least the top 5 vertical feet of the revetment shall be screened by May 1, 2004. After May 1, 2005, the upper bluff and 10 vertical feet of revetment screening shall be maintained for the life of the revetment. All native plantings shall be maintained in good growing conditions and shall be replaced as necessary to maintain the dense cascading screen of vegetation to completely cover the bluff area seaward of the blufftop edge and the upper one-third (roughly 10 vertical feet) of the revetment over the life of the revetment.

(c) Assumption of Risk, Waiver of Liability and Indemnity Agreement. The Permittee acknowledges and agrees, on behalf of itself and all successors and assigns: (i) that the site is subject to hazards from episodic and long-term bluff retreat and coastal erosion; (ii) to assume the risks to the Permittee and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Coastal Commission, its officers, agents, and employees for injury or damage from such hazards; (iv) to indemnify and hold harmless the Coastal Commission, its officers, agents, and employees with respect to the Coastal Commission's approval or other authorization of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards; and (v) that any adverse effects to property caused by the permitted project shall be fully the responsibility of the Permittee.

(d) Future Shoreline Planning. The Permittee agrees, on behalf of itself and all successors and assigns, to participate in future shoreline armoring planning efforts that involve the revetment located at the seaward edge of the 26th Avenue street right-of-way. Such planning efforts may involve consideration of a shoreline armoring management entity meant to cover the larger shoreline that includes the revetment here, and may involve consideration of potential modifications and/or programs designed to reduce public viewshed and beach access impacts due to shoreline armoring. Agreeing to participate in no way binds the Permittee (and all successors and assigns) to any particular outcome of such planning efforts, and in no way limits the ability of Permittee (and all successors and assigns) to express their viewpoint during the course of such planning efforts.

8. Future Maintenance. The Permittee acknowledges and agrees, on behalf of itself and all successors and assigns that: (a) it is the Permittee's responsibility to maintain the as-built revetment, the as-built stairway, the vegetative screening, and all irrigation and drainage structures in a structurally sound manner and their approved state; (b) to retrieve rocks that move seaward of the as-built revetment and either restack them (within the approved as-built revetment footprint and profile) or dispose of them at a suitable inland disposal location; and (c) to remove all debris that may fall from the blufftop area inland of the revetment onto the revetment or the beach below. Any such development, or any other maintenance development associated with the as-built revetment, the as-built stairway, the vegetative screening, and all irrigation and drainage structures, shall be subject to the following:

(a) Maintenance. "Maintenance," as it is understood in herein, means development whose purpose is: (1) to reestablish or place rock within the footprint and/or profile of the revetment structure (as shown on the approved As-Built Revetment Plan); (2) to replace in kind portions of the stairway structure; (3) to reestablish the permitted upper bluff drainage, vegetation, and/or irrigation elements of the approved Upper Bluff Plan; and/or (4) to retrieve any rocks that move seaward of the as-built revetment footprint and profile.

(b) Maintenance Parameters. Maintenance shall only be allowed subject to the parameters of the Approved Construction Plan. All beach areas shall be restored subject to the beach restoration parameters identified in special condition 3 above. Any proposed modifications to the approved construction plan and/or beach restoration requirements associated with any maintenance event shall be reported to planning staff of the Coastal Commission's Central Coast District Office with the maintenance notification (described below), and such changes shall require a coastal development permit or an amendment to this permit unless the Executive Director deems the proposed modifications to be minor in nature (i.e., the modifications would not result in additional coastal resource impacts).

(c) Other Agency Approvals. The Permittee acknowledges that these maintenance provisions do not eliminate the need to obtain permits from other agencies for any future maintenance and/or repair episodes.

(d) Maintenance Notification. At least 2 weeks prior to commencing any maintenance event, the Permittee shall notify, in writing, the Executive Director of the Coastal Commission . The notification shall include a detailed description of the maintenance event proposed, and shall include any plans, engineering and/or other technical reports, proposed changes to the maintenance parameters, other agency authorizations, and other supporting documentation describing the maintenance event. The maintenance event may commence after the two week notice period has ended unless the Permittee has been informed by planning staff of the Coastal Commission's Central Coast District Office that the maintenance event is inconsistent with this coastal development permit or the parameters and circumstances underlying this permit approval. In such event, the Permittee shall consult with planning staff of the Coastal Commission's Central Coast District Office to revise the proposed event in a manner consistent with this coastal development permit.

(e) Maintenance Coordination. Maintenance events shall, to the degree feasible and appropriate, be coordinated with other maintenance events proposed in the immediate vicinity with the goal being to limit coastal resource impacts, including the length of time that construction occurs in and around the beach area. As such, the Permittee shall make reasonable efforts to coordinate the Permittee's maintenance events with other maintenance events in the immediate area, including adjusting maintenance event scheduling as directed by planning staff of the Coastal Commission's Central Coast District Office.

(f) Non-compliance Proviso. If the Permittee is not in compliance with the terms and conditions of this coastal development permit at the time that a maintenance event is proposed, then the

maintenance event that might otherwise be allowed by the terms of this future maintenance condition shall not be allowed by this condition.

Recommended Findings and Declarations

The Commission finds and declares as follows:

3. Project Description

A. Project Location

The proposed project is located on the bluffs fronting the end of 26th Avenue at 26th Avenue Beach in the unincorporated Live Oak beach area of Santa Cruz County.

Santa Cruz County Regional Setting

Santa Cruz County is located on California's central coast and is bordered to the north and south by San Mateo and Monterey Counties (see Exhibit A). The County's shoreline includes the northern half of the Monterey Bay and the rugged north coast extending to San Mateo County along the Pacific Ocean. The County's coastal zone resources are varied and oftentimes spectacular, including the Santa Cruz Mountains coastal range and its vast forests and streams; an eclectic collection of shoreline environments ranging from craggy outcrops to vast sandy beaches (in both urban and more rural locations); numerous coastal wetland, lagoon and slough systems; habitats for an amazing variety and number of endangered species; water and shore oriented recreational and commercial pursuits, including world class surfing areas; internationally renowned marine research facilities and programs; special coastal communities; vast State Park lands; and the Monterey Bay itself. The unique grandeur of the region and its national significance was formally recognized in 1992 when the area offshore of the County became part of the Monterey Bay National Marine Sanctuary – the largest of the 12 such federally protected marine sanctuaries in the nation.

Santa Cruz County's rugged mountain and coastal setting, its generally mild climate, and its well-honed cultural identity combine to make the area a desirable place to both live and visit. As a result, the County has seen extensive development and regional growth over the years that the California Coastal Management Program has been in place. In fact, Santa Cruz County's population has more than doubled since 1970 alone with current census estimates indicating that the County is home to over one-quarter of a million persons.[1] This level of growth not only increases the regional need for housing, jobs, roads, urban services, infrastructure, and community services, but also the need for park areas, recreational facilities, and visitor serving amenities. For coastal counties such as Santa Cruz where the vast majority of residents live within a half-hour of the coast, and many closer than that, coastal zone resources are a critical element

[1] Census data from 1970 shows Santa Cruz County with 123,790 persons; California Department of Finance estimates for the 2000 census indicate that over 255,000 persons reside in Santa Cruz County.

in helping to meet these needs. Furthermore, with the shoreline itself (and its parks, beaches, trails, etc.) attracting visitors into the region, an even greater pressure is felt at coastal recreational areas and destinations like 26th Avenue Beach. With the Santa Cruz County shoreline and beaches providing arguably the warmest and most accessible ocean waters in all of Northern California, and with the large population centers of the San Francisco Bay area and the Silicon Valley nearby, this type of resource pressure is particularly evident in coastal Santa Cruz County.

See Exhibit A for project location information.

Live Oak Beach Area

Live Oak represents the unincorporated segment of Santa Cruz County located between the City of Santa Cruz (upcoast) and the City of Capitola (downcoast). The Live Oak coastal area is well known for excellent public access opportunities for beach area residents, other Live Oak residents, other Santa Cruz County residents, and visitors to the area. Walking, biking, skating, viewing, surfing, fishing, sunbathing, and more are all among the range of recreational activities possible along the Live Oak shoreline. In addition, Live Oak also provides a number of different coastal environments including sandy beaches, offshore surfing areas, rocky tidal shelves, blufftop terraces, and coastal lagoons. These varied coastal characteristics make the Live Oak shoreline unique in that a relatively small area can provide different recreational users a diverse range of alternatives for enjoying the coast. By not being limited to one large, long beach, or solely an extended stretch of rocky shoreline, the Live Oak shoreline accommodates recreational users in a manner that is typical of a much larger access system.

Primarily residential with some concentrated commercial and industrial areas, Live Oak is a substantially urbanized area with few major undeveloped parcels remaining. Development pressure has been disproportionately intense for this section of Santa Cruz County. Because Live Oak is projected to absorb the majority of the unincorporated growth in Santa Cruz County, development pressure will likely continue to tax Live Oak's public infrastructure (e.g., streets, parks, beaches, etc.).[2] Given that the beaches are the largest public facility in Live Oak, this pressure will be particularly evident in the beach area.

Proposed Development Site

The project would take place on the bluffs and back beach area of 26th Avenue Beach, an extremely popular recreational beach and surfing destination.[3] 26th Avenue Beach is a narrow stretch of recreational sand area almost entirely backed by rip-rap revetments extending from Corcoran Lagoon upcoast through to the first outcroppings of Pleasure Point downcoast.

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[2] The LCP identifies Live Oak at buildout with a population of approximately 29,850 persons; based on the County's recreational formulas, this corresponds to a park acreage of 150-180 acres. Though Live Oak accounts for less than 1% of Santa Cruz County's total acreage, this projected park acreage represents nearly 20% of the County's total projected park acreage.

[3] Historic County analyses identified an estimated average daily use of this beach of 848 persons, showing it to be the second highest beach use area in Live Oak after Twin Lakes State Beach (Technical Appendix; Live Oak General Plan; Planning Analysis and EIR, October 1977). Background LCP reports completed in 1980 estimated annual visitor counts for this beach segment at 195,393 (1980 Public Access Working Paper for the County LCP). Given the doubling of the County's population since 1970, and the increase in recreational use associated with that and population increases in surrounding areas, these historic figures appear to undercount the current level of use at this location.

At the end of 26th Avenue, the bluffs are armored with a revetment that has, over time, slumped and fallen into disrepair – it is dwarfed by up and downcoast private revetments that have been better maintained. Beach access stairs and armoring at this location pre-date the Coastal Act. Due to intervening residential development, the 26th Avenue stairway access point is a critical vertical accessway. Without the stairway, beach and ocean recreational users are forced up and downcoast to Moran Lake and Corcoran Lagoon to get to the beach. This has been the case for multiple periods of time in the past since the stairs have been destroyed by winter storms repeatedly, most recently they have been missing since the stairway was destroyed by winter storms in 1997-98.

B. Proposed Project

The Applicant proposes to replace the destroyed stairway with a new stairway engineered to better withstand the dynamic beach environment within which it is placed. To more closely conform to the bluff configuration, and to keep the stairway's base as far inland as possible to avoid beach loss and lessen direct wave attack, it has been modified to include a series of offset landings set on deep pier concrete caissons. The upper flights of stairs would be wood with a wood railing, and the lowest flight of stairs would be concrete with a metal railing to better withstand wave attack, particularly during extreme winter scour events. The elevation of the last step has been taken down to +2 NGVD to ensure continuous access even during fairly severe winter scour events (when the sand on the beach has washed away) because of the importance of the stairs for year-round access; particularly surfing access for winter swells. During summer high-use periods, much of the lower portion of the stairs would be covered in sand because summer beach elevations are higher. The existing revetment would be augmented to match the profile and footprint of the immediately up and downcoast private revetments. See proposed plans in Exhibit B.

4. Coastal Development Permit Determination

A. Public Access and Recreation

Coastal Act Section 30604(c) requires that every coastal development permit issued for any development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and public recreation policies of [Coastal Act] Chapter 3." The proposed project is located seaward of the first through public road (East Cliff Drive). Coastal Act Sections 30210 through 30214 and 30220 through 30224 specifically protect public access and recreation. In particular:

> ***Section 30210:*** *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the*

need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30211: *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

Section 30213: *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.*

Section 30214(a): *The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case…*

Section 30221: *Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*

Section 30223: *Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.*

Coastal Act Section 30240(b) also protects parks and recreation areas. Section 30240(b) states:

Section 30240(b). *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

The 26th Avenue overlook and stairway is a critical component of public access to the highly used 26th Avenue Beach area. It is heavily used, and has been sorely missed in the time since it was last destroyed over 5 years ago. Replacing the stairway will improve public access at this location and within the larger Live Oak beach area as a whole. In addition, the 26th Avenue overlook area is currently an undefined dirt area on the seaward side of the traffic barricade, and has not been designed to enhance the public access experience. The County intends to enhance the blufftop overlook with new benches, landscaping, parking spaces, directional signs, and advanced water quality filtration; these improvements would be constructed at the same time as the proposed project.[4]

The revetment repair would extend the revetment base seaward to match up and downcoast revetments. This extension would cover roughly 1,000 square feet of summer beach space (i.e., in winter time, the beach does not cover this entire area with sand). A portion of this area was previously occupied by both

[4] These other public access improvements were permitted by County CDP in 2002; CDP 01-0056. These improvements were also partially funded by Coastal Conservancy grant funds, as is the proposed project and as was the stairway that was destroyed in the 1997-98 winter storms, as well as its predecessor.

the stairway base, as well as by the last flight of stairs on the stairway (making the area underneath unusable for recreational access); a total of roughly 150 square feet. Therefore, the revetment repair would make roughly 850 square feet of beach unusable at certain times of the year (primarily winter when the sand has been scoured from the beach). This impact on recreation beach use is not insignificant, and represents a burden borne by the public. However, it is offset to a degree by the fact that the benefit of the project as a whole is to the public (stairway access to the beach as well as the range of public access improvements at the overlook itself) as well. This is different from typical armoring projects involving private development where the benefit is to the private interest, while the burden of its impacts is borne by the public. In addition, the beach area nearest the end of the stairway is heavily traveled by beach and stairway users and is less valuable in this regard for general recreational beach use as a result, albeit to a limited degree.

As a whole, the proposed project along with the other coordinated blufftop improvements will vastly improve public access at this location. There will be some loss of beach area available during more scoured times, but this loss is offset by the public beach access gains of the project. The project is conditioned to prohibit any further seaward encroachment (see special condition 7). Construction has been designed to minimize impacts to public access during that time, and is subject to a rigorous construction plan requirement (see special condition 2). The beach and beach access points would be restored immediately following project completion (see special condition 3).

In sum, the proposed project is designed to maximize public access to the beach, ocean, and 26th Avenue overlook; to protect existing no cost access; to protect upland recreational lands for priority recreational uses; and is therefore consistent with (and carries out) the Coastal Act access and recreation policies cited in this finding.

B. Visual Resources

Coastal Act Section 30251 states:

> ***Section 30251.*** *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

Coastal Act Section 30240(b), previously cited, also protects the aesthetics of parks and recreation areas such as those involved in this application. Section 30240(b) states:

> ***Section 30240(b).*** *Development in areas adjacent to environmentally sensitive habitat areas*

and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

A potential impact from the project on the recreational beach area is the introduction of an unnatural revetment and stairway structure into the beach viewshed. However, the existing viewshed is already defined by revetments, and historically included the stairway. The stairway has been designed to use wood materials for the upper two-thirds, and concrete with metal railing for the lowest one-third. These materials should help the structure to blend into the existing viewshed aesthetic fairly well. In addition, the Applicant has committed to landscaping the upper portion of the bluff and revetment with non-invasive native species to provide a visual screen as seen from below, and an enhanced overlook as seen from above as part of their proposed project, as part of an overall blufftop landscaping, irrigation, and drainage plan; this stipulation can be implemented by condition (see proposed project plan note in Exhibit B, and special condition 4). The upper bluff area and the top 10 feet of the revetment would be covered with vegetation in perpetuity.

The lower portion of the revetment would be visible during all times of the year, and more of it during the winter when beaches are scoured. However, this is not significantly different from the existing revetments defining the viewshed at this location. Moreover, the burden of the viewshed impact is borne by the public, but the public is also getting the public access benefit of the stairway/revetment structure in this case. The visual impacts in this regard are also offset by the substantial enhancements to the 26th Avenue overlook and the bluff edge below the blufftop and the revetment (as well as the screening vegetation over the top of the revetment). Blufftop management (for drainage, irrigation, and vegetation is required (see special condition 4).

As conditioned, the Commission finds that the proposed project has been designed in such a way as to minimize public view impacts and will be visually compatible with the character of surrounding area; and, as such, is consistent with Coastal Act Sections 30240(b) and 30251 as discussed in this finding.

C. Geologic Conditions and Hazards

Coastal Act Section 30235 addresses the use of shoreline protective devices:

Section 30235. *Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.*

Coastal Act Section 30253 addresses the need to ensure long-term structural integrity, minimize future risk, and avoid additional, more substantial protective measures in the future. Section 30253 provides, in applicable part:

Section 30253. *New development shall:*

(1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

Coastal Act Section 30235 acknowledges that seawalls, revetments, cliff retaining walls, groins and other such structural or "hard" methods designed to forestall erosion also alter natural shoreline processes. Accordingly, with the exception of new coastal-dependent uses, Section 30235 limits the construction of shoreline protective works to those required to protect existing structures or public beaches in danger from erosion. The Coastal Act provides these limitations because shoreline structures have a variety of negative impacts on coastal resources including adverse affects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, ultimately resulting in the loss of beach.

In this case, a revetment already exists at this location. The revetment repair proposed would augment the existing revetment to extend its keyway out to match those of the up and downcoast revetments. As such, it proposes an area of revetment in excess of that previously present and permitted. This additional area of revetment represents new armoring.

Under Coastal Act Section 30235, new armoring may be approved if: (1) there is an existing structure in danger from erosion; (2) shoreline altering construction is required to protect the existing threatened structure; and (3) the required protection is designed to eliminate or mitigate the adverse impacts on shoreline sand supply. Repair of existing seawalls can be either exempt from permit requirements or required to obtain a permit depending on the nature of the repair (Title 14 CCR, Section 13252(a)).

1. Existing Structure to be Protected

As described earlier, the project is primarily a repair project designed protect the structural integrity of the previously permitted armoring structure that is itself designed to protect the public improvements at 26th Avenue (including the stairway, benches, overlook, utilities, etc.). As such, the Commission has previously recognized the structures here as existing development for which shoreline armoring was appropriate under Section 30235; this same finding is appropriate in this case. There are basically two types of structures for which armoring is being considered here: (1) the previously permitted revetment that is in need of repair; and (2) the public improvements protected by the revetment. As described in the project description section of this report, the public access facilities at this location are resources of tremendous value.

2. Danger from Erosion

Bluff retreat rates can be notoriously difficult to accurately predict, although an increased understanding of coastal processes is improving the reliability of estimates. In this case, it is clear that the bluff at the end of 26th Avenue has been retreating more rapidly than the more heavily armored bluffs fronting the adjacent private residential properties. Aerial photo analysis confirms this. As result, the overlook itself has retreated, negatively impacting its use as a public access amenity inasmuch as less space is available for the public improvements, and private walls up and downcoast have remained fixed in location.

More importantly, the stairway itself has been destroyed on multiple occasions by storm waves. The revetment at this location has not been adequate to prevent against such occurrences historically.

To conclusively show that the structures in this case are in danger from erosion, there must be an imminent threat to these structures. While each case is evaluated based upon its own merits, the Commission has generally interpreted "imminent" to mean that a structure would be imperiled in the next two or three storm cycles (generally, the next few years).

In this case, the public access structures, and particularly the stairway, are in imminent danger; this is evidenced by the fact that the stairway was already destroyed by winter storms. Without the proposed project, ongoing erosion can be expected to result in the loss of the existing revetment, sections of the overlook, public infrastructure in the 26th Avenue right-of-way, and ultimately the stairway itself. The Commission finds that the existing structures at this locations are in danger from erosion for the purposes of Section 30235 and that repair is warranted.

3. Feasible Protection Alternatives to a Shoreline Structure

The second test of Section 30235 of the Coastal Act that must be met is that the proposal to alter the shoreline must be *required* to protect the existing structures. In other words, under the policies of the Coastal Act, the project must be the least environmentally damaging feasible alternative. Section 21080.5(d)(2)(A) of CEQA likewise prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available that would substantially lessen any significant adverse effect that the activity may have on the environment. The Commission notes that it already has, by previous permit, found that the public structures here are worthy of protection. Any action the Coastal Commission may be required to take to continue protecting the public amenities at this location must be consistent with this section of CEQA as well as the Coastal Act. Other alternatives typically considered include: the "no project" alternative; abandonment of threatened structures; relocation of the threatened structures; upper bluff retaining walls alone; sand replenishment program; and other drainage and maintenance programs on the blufftop itself.

In this case, the "no project" alternative is not viable because the existing structures, including the stairway, would not be viable absent some form of repaired armoring. As stated, the 26th Avenue stairway, and the recreational beach and offshore areas, are of tremendous importance within the Live Oak beach area. The loss of which would not be consistent with the protection afforded such a resource in danger from erosion as provided for by the Act. Likewise, abandonment of the threatened structures would not protect this significant public access facility as directed by the Act.

Relocation of the threatened structures inland is another alternative typically considered. In this case, the stairway requires a location on the beach to be able to function at all. Likewise, relocating overlook components inland would make it so they could not function either because the overlook would act as a ceiling-less 'tunnel' with private walls blocking most all of the ocean view up and down coast.

A third alternative to the proposed armoring would be to use upper blufftop remediation measures designed to forestall erosion (new drainage features, slope revegetation, etc.).[5] However, such bluff remediation alone would not be sufficient to protect the public access structures at this locations. Moreover, due to the existing revetment (i.e., the previously permitted profile and footprint of the revetment) there is limited upper bluff area available within which to attempt such measures. Their utility would be limited to extending the life of the terrace deposits above the revetment as this area "lays back" over time. They would not be able to protect the stairway itself.

The stairway and overlook system are threatened by rapid erosion. There are not any "soft" fixes that could be pursued alone to ensure long-term protection of these existing endangered structures. If the structures are to be so protected, some form of hard protective armoring repair and augmentation to maintain the integrity of the existing permitted armoring system is required.

The project, therefore, meets the second test of Section 30235 of the Coastal Act.

4. Sand Supply Impacts

The third test of Section 30235 (previously cited) that must be met in order to allow Commission approval is that shoreline structures must be designed to eliminate or mitigate adverse impacts to local shoreline sand supply.

Beach sand material comes to the shoreline from inland areas, carried by rivers and streams; from offshore deposits, carried by waves; and from coastal dunes and bluffs, becoming beach material when the bluffs or dunes lose material due to wave attack, landslides, surface erosion, gullying, et cetera. Coastal dunes are almost entirely beach sand, and wind and wave action often provide an on-going mix and exchange of material between beaches and dunes. Many coastal bluffs are marine terraces – ancient beaches which formed when land and sea levels differed from current conditions. Since the marine terraces were once beaches, much of the material in the terraces is often beach quality sand or cobble, and a valuable contribution to the littoral system when it is added to the beach. While beaches can become marine terraces over geologic time, the normal exchange of material between beaches and bluffs is for bluff erosion to provide beach material. Bluff retreat and erosion is a natural process resulting from many

[5] It should be noted that the alternative of plantings and bluff drainage controls (in some combination) is not necessarily meant to be considered an equal alternative to a seawall or other more major form of bluff altering armor. In fact, they are not generally seen as the ultimate "fix" or as a replacement for a "hard" armoring project such as that proposed. Rather, these types of "soft" alternatives can serve to extend the design life of setbacks by increasing bluff stability and slowing erosion. Thus, they must be understood as alternatives that can allow for natural processes to continue while simultaneously providing continued stability to the bluff. Given the active forces of erosion taking place unabated along the unarmored California coast, erosion will eventually (over the long-term) result in bluff retreat. At that point, in some cases, plantings and bluff drainage controls may not be adequate to address the erosion problem of themselves (particularly if they have already been implemented previously and their effect on bluff stability already factored into the analysis), and other alternatives could become more feasible (including wholesale relocation out of danger and even armoring of the coast).

different factors such as erosion by wave action causing cave formation, enlargement and eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration. When the back-beach or bluff is protected by a shoreline protective device, the natural exchange of material either between the beach and dune or from the bluff to the beach will be interrupted and, if the shoreline is eroding, there will be a measurable loss of material to the beach

The subject site is located within the Santa Cruz Littoral Cell. The Santa Cruz Cell is a high volume cell with annual longshore transport estimated between 300,000 and 500,000 cubic yards of beach quality materials annually. The dominant direction of longshore transport in this sand supply system is north north-west to south south-east; at the subject site, this translates roughly into a west to east distribution. Materials in this system have been estimated to come mainly from coastal streams (roughly 75%), with 20% coming from bluffs such as the subject site, and 5% coming from coastal ravines and sand dunes.

Some of the effects of such engineered armoring structures on the beach (such as scour, end effects and modification to the beach profile) are temporary or difficult to distinguish from all the other actions which modify the shoreline. Such armoring also has distinct qualitative impacts to the character of the shoreline and visual quality. However, some of the effects that a structure may have on natural shoreline processes can be quantified, including: 1) loss of the beach area on which the structure is located; 2) the long-term loss of beach which will result when the back-beach location is fixed on an eroding shoreline; and 3) the amount of material which would have been supplied to the beach if the back-beach or bluff were to erode naturally.

In this case, the back-beach is already armored by the existing permitted revetment, and thus the sand supply impact is limited to the loss of the sand-generating area on which the structure is located.[6]

Encroachment on the Beach

Shoreline protective devices such as seawalls, revetments, gunnite facings, groins, et cetera are all physical structures which occupy space. When a shoreline protective device is placed on a beach area, the underlying beach area cannot be used as beach. This generally results in a loss of public access as well as a loss of sand-generating area. The area where the structure is placed will be altered from the time the protective device is constructed, and the extent or area occupied by the device will remain the same over time, until the structure is removed or moved from its initial location, or in the case of a revetment, as it spreads seaward over time. The beach area located beneath a shoreline protective device, referred to as the encroachment area, is the area of the structure's footprint.

The revetment repair would extend the revetment seaward and key it into the underlying sandstone. While there are access and recreational issues associated with the loss of any useable recreational sandy beach space (as discussed in the preceding public access finding), because the sand would be scraped away and the structures placed onto sandstone (and the displaced sand pushed back over the structures), the sand supply impact in this case concerns the potential loss of sandstone area for generating sand. As discussed

[6] The sand supply impact refers to the way in which the project impacts creation and maintenance of beach sand. Although this ultimately translates into beach impacts, the discussion here is focused on the first part of the equation and the way in which the augmentation proposed here would impact sand supply processes. Recreational beach area coverage is detailed in the previous public access finding.

above, sandstone is one probable source of sand for the Santa Cruz Littoral Cell shoreline supply. As a result, the proposed project would eliminate a small section of sandstone that would otherwise contribute to the local sand supply during winter beach conditions.

In this case, the area of encroachment has been limited by project design to the least amount necessary to mesh with existing up and downcoast revetments. It measures approximately 1,000 square feet. To convert the 1,000 square foot loss of beach per year into the volume of sand necessary to restore the beach commensurately in cubic yards, coastal engineers use a conversion value representing units of cubic yards per square foot of beach.[7] In this case, the Commission has not been able to establish an actual conversion factor for the 26th Avenue Beach vicinity. However, if a 1.0 conversion factor is used (i.e., the low end of the spectrum of values typically assumed by coastal engineers), a conservative estimate of the cubic yard equivalent of 1,000 square feet per year can be calculated. Using the sand conversion factor of 1.0, the direct loss of beach due to this encroachment translates into a one-time impact of 1,000 cubic yards of sand.

Sand Supply Mitigation

The 1,000 cubic yard sand supply impact has been minimized by project design, but cannot be eliminated. The project, thus, has not been designed to eliminate impacts on local shoreline sand supply as required by Coastal Act Section 30235. The project has, however, been designed to be located as far inland as possible, and has been designed to minimize beach area encroachment. While mitigating factors, these design mitigations alone are not commensurate with the long-term impact on 26th Avenue Beach. Because the project as designed does not meet the sand supply impact test of Section 30235 (i.e., the project design does not eliminate and does not completely mitigate such impacts), the Commission is not required to approve the revetment augmentation proposed. As discussed above, however, the structures endangered in this case are of critical public access importance and armoring has been shown to be the appropriate protective solution. Thus, in order to approve the project in conformance with Section 30235, additional mitigation for the sand supply impacts is necessary. Typical mitigations required by the Commission for such direct sand supply impacts have been in-lieu fees and/or beach nourishment.

With regards to beach nourishment, a formal sand replenishment strategy can introduce an equivalent amount of sandy material back into the system to mitigate the loss of sand that would be caused by a protective device. Obviously, such an introduction of sand, if properly planned, can feed into the Santa Cruz Littoral Cell sand system to mitigate the impact of the project. However, there are no currently existing beach nourishment programs directed at this beach area. Absent a comprehensive program that provides a means to coordinate and maximize the benefits of mitigation efforts in the area now and in the

[7] This conversion value is based on the regional beach and nearshore profiles, and overall characteristics. When there is not regional data to better quantify this value, it is often assumed to be between 1 and 1.5, the idea being that to build a beach seaward one foot, there must be enough sand to provide a one-foot wedge of sand through the entire region of onshore-offshore transport. If the range of reversible sediment movement is from -30 feet msl to +10 feet msl, then a one-foot beach addition must be added for the full range from -30 to +10 feet, or 40 feet total. This 40-foot by 1 foot square parallelogram could be built with 1.5 cubic yards of sand (40 cubic feet divided by 27 cubic feet per cubic yard). If the range of reversible sediment transport is less than 40 feet, it will take less than 1.5 cubic yards of sand to rebuild one square foot of beach; if the range of reversible sediment transport is larger than 40 feet, it will take more than 1.5 cubic yards of sand to rebuild one square foot of beach.

future, the success of such piecemeal mitigation efforts is questionable. Without a program that evaluates the natural processes and existing conditions in order to establish the most appropriate sites and methods for introducing sand material so that it will mitigate this project's impacts and maximize benefits to the sandy beach, the Commission cannot specify a direct in-kind placement of sandy material as mitigation.

As an alternative mitigation mechanism, the in-lieu fee is oftentimes used by the Commission when in-kind mitigation of impacts is not presently available. In situations where ongoing sand replenishment programs are not yet in place, the in-lieu sand mitigation fee is deposited into an account until such time as an appropriate program is developed and the fees can then be used to offset the designated impacts. Recent estimates to deliver beach quality sand to Santa Cruz beaches are roughly $25 a cubic yard. For 1,000 cubic yards, this translates roughly into a $25,000 fee. However, such a fee option in this case makes little public policy sense because there doesn't currently exist a program to use the fee, and limited County public access funds are better applied to public access enhancement projects feasible now (such as the proposed project).

In this case, the sand supply impact, which is ultimately a public access impact, is mitigated by project design and by the overall public access benefit derived from the project. This is to be maintained for the long-term (see special condition 8).

Project impacts to shoreline sand supply are thus properly and commensurately mitigated by a combination of project design (i.e., located as far inland as possible and beach area encroachment minimized) and the project itself. Such mitigation fulfills the third test of Section 30235 requirement.

5. Long Term Structural Stability

Coastal Act Section 30253 requires the project to assure long-term stability and structural integrity, minimize future risk, and avoid additional, more substantial protective measures in the future. For the proposed project, the main Section 30253 concern is assuring long-term stability. This is particularly critical given the dynamic shoreline environment within which the proposed project would be placed.

Moreover, with global warming and sea level rise (as described above), increased wave heights and wave energy are likewise expected. Along much of the California coast, the bottom depth controls the nearshore wave heights, with bigger waves occurring in deeper water. Since wave energy increases with the square of the wave height, a small increase in wave height can cause a significant increase in wave energy and wave damage. So, combined with the physical increase in water elevation, a small rise in sea level can expose previously protected back shore development to both inundation and wave attack, and those areas that are already exposed to wave attack will be exposed to more frequent wave attack with higher wave forces. Structures that are adequate for current storm conditions may not provide as much protection in the future.

A second concern with global warming and sea level rise is that the climatic changes could cause changes to the storm patterns and wave climate for the entire coast. As water elevations change, the transformation of waves from deep water will be altered and points of energy convergence and divergence could shift. The new locations of energy convergence would become the new erosion "hot spots" while the

divergence points may experience accretion or stability. It is highly likely that portions of the coast will experience more frequent storms and the historic "100-year storm" may occur every 10 to 25 years. For most of California the 1982/83 El Niño event has been considered the "100-year storm." Certain areas may be exposed to storms comparable to the 1982/83 El Niño storms every few decades.

In an attempt to ensure stability under such conditions, the Commission has required that all new shoreline structures be designed to withstand either a 100-year storm event, or a storm event comparable to the 1982/83 El Niño. Also, since it is possible that storm conditions may worsen in the future, the Commission has required that structures be inspected and maintained on a regular basis. The coast can be altered significantly during a major storm and coastal structures need to be inspected on a regular basis to make sure they continue to function as designed. If storm conditions worsen in future years, the structures may require changes or modifications to remain effective. In some rare situations, storm conditions may change so dramatically that existing protective structures may no longer be able to provide any significant protection, even with routine maintenance.

For revetments, an important component of long-term stability is the function of a keyway to "lock" the revetment into place. The current revetment is not keyed but rather was placed directly atop beach sands. Such an un-keyed structure is liable to "float" around somewhat on the sand as the beach profile changes and scouring takes place, and as regular wave attack takes its toll. As a result, an un-keyed revetment is more liable to shift and undulate than is a keyed structure. Likewise, lacking a keyway individual rocks are more likely to migrate out onto the beach or into the intertidal area, sometimes migrating just under the sand, where these rocks can become a public access impediment and a public safety hazard. Although all rock revetments require substantial maintenance, an un-keyed revetment will require relatively more than a keyed revetment. Part of the reason for the proposed augmentation repair is to install a keyway to promote long-term stability.

Also critical to the task of ensuring long-term stability as required by Section 30253 is a formal long-term monitoring and maintenance program. If the stairway or repaired revetment were damaged in the future (e.g. as a result of flooding, landsliding, wave action, storms, etc.) it would lead to a degraded public access condition, and could further threaten the stability of the overlook, which could lead to the need for more bluff alteration and/or more substantial armoring. In addition, such damages could adversely affect the beach by resulting in debris on the beach and/or creating a hazard to the public using the beach. Therefore, in order to find the proposed project consistent with Coastal Act Section 30253, the proposed project must be maintained in its approved state. Further, in order to ensure that the County and the Commission know when repairs or maintenance are required, the County must regularly monitor the condition of the subject armoring, particularly after major storm events. Such monitoring will ensure that the Permittee and the Commission are aware of any damage to or weathering of the armoring and can determine whether repairs or other actions are necessary to maintain the structures in their approved state before such repairs or actions are undertaken. To assist in such an effort, monitoring plans should provide vertical and horizontal reference distances from armoring structures to surveyed benchmarks for use in future monitoring efforts.

The project proposes, and would be conditioned, to prohibit any further seaward encroachment (see special condition 7, and maintain blufftop stability through controlling drainage, vegetation, and irrigation

(see special condition 4).

To ensure that the proposed project is properly maintained to ensure their long-term structural stability as directed by the Act, the County has agreed to a monitoring and maintenance program ,such a program shall provide for evaluation of the condition and performance of the proposed project and overall bluff stability, and shall provide for necessary maintenance, repair, changes or modifications. The County would be approved under the coastal permit to maintain the project in its approved state and subject to the terms and conditions identified by the special conditions here (see special condition 8)

6. Assumption of Risk

The experience of the Commission in evaluating the consistency of proposed developments with Coastal Act policies regarding development in areas subject to problems associated with geologic instability, flood, wave, or erosion hazard, has been that development has continued to occur despite periodic episodes of heavy storm damage, landslides, or other such occurrences. Oceanfront development is susceptible to bluff retreat and erosion damage due to storm waves and storm surge conditions. Past occurrences statewide have resulted in public costs (through low interest loans and grants) in the millions of dollars. As a means of allowing continued development in areas subject to these hazards while avoiding placing the economic burden on the people of the state for damages, the Commission has regularly required that Applicants acknowledge site geologic risks and agree to waive any claims of liability on the part of the Commission for allowing the development to proceed.

The risks of the proposed project include that the revetment and/or public access structures will be damaged by bluff failure, erosion, and wave action. Although the Commission has sought to minimize these risks, the risks cannot be eliminated entirely. Given that the Applicant has chosen to construct the proposed project despite these risks, the Applicant must assume these risks. Accordingly, this approval is conditioned for the Applicant to assume all risks for developing at this location (see special condition 7b). Specifically, special condition 7b requires the County to acknowledge the risks and indemnify the Commission against claims for damages that may be brought by third parties against the Commission as a result of its approval of this permit.

7. Conclusion

As discussed above, the facts of this particular case show that the proposed project would repair significant previously permitted armoring and protect public access structures currently in danger from ongoing erosion. The armoring repair and augmentation proposed is required to maintain the integrity of the existing revetment. Project impacts to shoreline sand supply are commensurately mitigated by a combination of project design and access improvements included in the project. Long-term stability measures are part of the project design, and monitoring and maintenance to ensure long-term structural stability is likewise provided. As so conditioned, the proposed project is consistent with Coastal Act Sections 30235 and 30253 as discussed in this finding.

D. California Environmental Quality Act (CEQA)

Section 13096 of the California Code of Regulations requires that a specific finding be made in

conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. This staff report has discussed the relevant coastal resource issues with the proposal, and has recommended appropriate suggested modifications to avoid and/or lessen any potential for adverse impacts to said resources. All public comments received to date have been addressed in the findings above. All above Coastal Act findings are incorporated herein in their entirety by reference.

As such, there are no additional feasible alternatives nor feasible mitigation measures available which would substantially lessen any significant adverse environmental effects which approval of the proposed project, as modified, would have on the environment within the meaning of CEQA. Thus, if so modified, the proposed project will not result in any significant environmental effects for which feasible mitigation measures have not been employed consistent with CEQA Section 21080.5(d)(2)(A).